“SAFE AND EASY ULTRASONIC DEBRIDEMENT”
A Hands On Workshop

Cynthia Fong, RDH, MS

Washington State Dental Association
Pacific Northwest Dental Conference
Bellevue, WA
Friday – June 21, 2019
1:00 pm – 4:00 pm
1. (Image A) Of the six ultrasonic inserts provided to you, what total number of inserts should be used to provide complete periodontal debridement for this patient?
   a. 1 to 2
   b. 3 to 4
   c. 5 to 6
   d. more than 6

2. (Image A) Of the six ultrasonic inserts provided to you, which insert is NOT MANDATED to be used when providing complete periodontal debridement for this patient? Please indicate the color of the grip: _________________________

3. (Image B) Observe the adaptation of the curved insert. Which photograph demonstrates the correct adaptation of the insert for subgingival debridement of the furcation, utilizing a traditional instrumentation technique?
   a. left photograph
   b. right photograph

4. (Image C) If utilizing a modified instrumentation technique then the curved insert is correctly adapted.
   a. true
   b. false

5. What is the clinical end point of treatment for periodontal debridement?
   a. microbial
   b. tissue response
   c. surface smoothness
   d. total calculus removal

6. Which of the following variables influences the working tip area that is active on an ultrasonic insert?
   a. grasp
   b. frequency
   c. water output
   d. insert design

7. The power control on the unit allows the clinician to manipulate which of the following?
   a. frequency
   b. patient comfort
   c. length of stroke
   d. both b and c

8. Which of the following factors would BEST dictate the ultrasonic insert selected for debridement?
   a. clinician’s preference
   b. patient threshold to pain
   c. quantity of deposit (gross versus fine)
   d. location of deposit (supragingival versus subgingival)

9. If the stroke pattern of an ultrasonic insert is linear then which of the following surfaces of the insert can be adapted to provide complete periodontal debridment?
   a. face
   b. back
   c. point
   d. lateral borders
10. Each of the following treatment strategy can be achieved when using ultrasonic inserts EXCEPT one. Which one is the EXCEPTION?
   a. deplaquing
   b. root planing
   c. gross debridement
   d. definitive debridement
   e. None of the above (all of the strategies can be accomplished with ultrasonics)

11. Each of the following instrumentation criterion should be applied during ultrasonic debridement EXCEPT one. Which one is the EXCEPTION?
   a. use a light exploratory grasp
   b. adapt the active tip area of the insert
   c. position the concave surface of the insert against tooth
   d. avoid placement of the point of the insert on the tooth

12. What the appropriate instrumentation sequence when providing complete periodontal debridement on a patient presenting with Stage 2 Periodontitis?
   1. gross ultrasonic debridement
   2. definitive ultrasonic debridement
   3. definitive hand debridement
   4. extrinsic stain removal
   a. 1, 3, 4
   b. 2, 3, 4
   c. 1, 2, 3, 4
   d. 1, 3, 2, 4

13. Each of the following criterion should be considered when providing complete periodontal debridement EXCEPT one. Which one is the EXCEPTION?
   a. instrument design
   b. severity of the disease
   c. patient management
   d. insurance coverage

14. The need to replace an ultrasonic can be determined by regularly monitoring the wear sustained by the insert. Generally, an ultrasonic insert should be replaced once a year.
   a. both statements are TRUE
   b. both statement are FALSE
   c. the first statement is TRUE, the second is FALSE
   d. the first statement is FALSE, the second is TRUE
SAFE AND EASY ULTRASONIC DEBRIDEMENT: A HANDS ON WORKSHOP

Cynthia Fong, RDH, MS

COURSE DESCRIPTION
When using ultrasonic devices for periodontal debridement, clinicians need to know why to use it; what to use; and how to use it—all without compromising the safety of the patient. This workshop will provide detailed information to address the uncertainty of those issues. The “what” will concentrate on distinguishing between the various types of ultrasonic technologies and ultrasonic inserts; the “why” will discuss the changes that have occurred in the treatment of periodontal disease including patient indications and contraindications; and the “how” will be the primary focus of the workshop in which the participant will understand the principles of ultrasonic instrumentation and have the opportunity to apply several differently-designed inserts in order to gain the confidence in their clinical skills. At the completion of this workshop participants will be able to immediately incorporate the proper use of ultrasonic devices in clinical practice.

COURSE OBJECTIVES
At the completion of this workshop, the participant will be able to:
- describe the changes in the treatment of periodontal disease and its impact on the use of ultrasonics
- discuss the fundamentals of ultrasonics including patient considerations
- demonstrate the proper adaptation of a variety of ultrasonic inserts for the purpose of complete periodontal debridement

COURSE NOTES

1. ULTRASONIC EFFECTS (WHY TO USE)

   acoustic turbulence  
   tip stroke causes coolant to accelerate producing an intensified swirling effect

   acoustic streaming  
   uni-directional fluid flow caused by ultrasound waves

   cavitation  
   the formation of bubbles in liquid by rapid pressure changes; when bubbles implode they produce shock waves in the liquid

Acoustic turbulence, acoustic streaming and cavitation have been shown to be effective in removing lipopolysaccharides from root surfaces. The ultrasonic waves have a lethal effect on the gram-negative pathogens.
2. **BASIC ULTRASONIC TERMINOLOGY**

   **Frequency**  
   the number of times per second the insert tip moves back and forth during one cycle

   **Active tip area**  
   effected by frequency  
   higher frequency = smaller active tip area

   **Stroke**  
   the maximum distance the insert tip moves during one cycle

   **Tuning**  
   automatic tuned ultrasonic possesses two control knobs:  
   1. water control knob controls water output  
   2. power knob controls the length of stroke  
      - power adjusted by clinician  
      - frequency is automatically tuned to peak efficiency (motional feedback)  
      - optimal performance is achieved when utilizing proper adaptation and appropriate pressure

   Manual tuned ultrasonic possesses three control knobs:  
   1. water knob controls water output  
   2. power knob controls length of stroke  
   3. tuning knob controls frequency  
      - frequency is adjusted by the clinician through sight and sound

   **Clinical Power**  
   the ability to remove deposits under load  
   factors which determine clinical power: stroke, frequency, type of motion and angulation of the motion against the tooth surface

3. **TYPES OF POWER SCALERS (WHAT TO USE)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Sonic</th>
<th>Ultrasonic</th>
<th>Piezoelectric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (cycles per second)</td>
<td>3,000 to 8,000</td>
<td>18,000 – 42,000</td>
<td>24,000 – 45,000</td>
</tr>
<tr>
<td>Vibrations</td>
<td>compressed air</td>
<td>electrical energy applied to metal stacks</td>
<td>electrical energy applied to crystals</td>
</tr>
<tr>
<td>Stroke</td>
<td>elliptical</td>
<td>elliptical</td>
<td>linear</td>
</tr>
<tr>
<td>Application</td>
<td>Calculus Removal: Light to moderate</td>
<td>Calculus Removal: Light to Heavy</td>
<td>Calculus Removal: Light to heavy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inadvertent de-plaquing</td>
<td>Inadvertent de-plaquing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Definitive de-plaquing</td>
<td>Definitive de-plaquing</td>
</tr>
<tr>
<td>Adaptation</td>
<td>Traditional</td>
<td>Traditional</td>
<td>Traditional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Modified</td>
<td></td>
</tr>
<tr>
<td>Advantages</td>
<td>• Water supply</td>
<td>• Slim diameter inserts</td>
<td>• Slim diameter tips</td>
</tr>
<tr>
<td></td>
<td>• Single rheostat</td>
<td>• Elliptical stroke</td>
<td>• Less water</td>
</tr>
<tr>
<td>Disadvantages</td>
<td>• Low frequency</td>
<td>• Separate water supply</td>
<td>• Separate water supply</td>
</tr>
<tr>
<td></td>
<td>• Lack of slim diameter tips</td>
<td>• Separate rheostat</td>
<td>• Separate rheostat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Linear stroke</td>
<td></td>
</tr>
</tbody>
</table>
4. **PREPARATION PROCEDURES**

**Patient**

a. Six recommendations to increase patient comfort:
   1. use light pressure
   2. use a low power setting
   3. do not adapt the point of the insert
   4. keep the tip active
   5. assess the water control
   6. position the shank of the insert parallel to the long axis of the tooth

b. Review medical and dental histories
   - Medical patient considerations
     - predisposition to infection
     - infectious disease transmitted by aerosols
     - respiratory diseases
     - pacemaker
     - children
   - Dental patient considerations
     - areas of demineralization
     - margins of restorations
     - extreme sensitivity

c. Use of protective apparel
d. Patient positioning
e. Use of anesthetics
f. Administer pre-procedural rinse
g. Explanation of the procedure

**Unit**

a. Position of the unit
b. Minimize water contamination
c. Insert insertion
d. Handpiece line positioning
e. Control settings (power, tuning and water adjustments) dictated by the
   - patient’s oral condition
   - patient’s comfort level
   - safety
   - proposed treatment plan
   - type of insert to be used
f. In general, use a low power setting for removal of light calculus, stain or for de-plaquing and use a medium to high setting for removal of gross calculus and stain

**Operator**

a. Use of protective apparel
   - gloves
   - mask
   - eyewear
5. **Insert Evaluation**
When selecting an insert for the use of periodontal debridement, the clinician should critically evaluate:
- Lavage (water delivery)
- Access (size)
- Adaptation (shape)

6. **General Premise of Insert Selection**
The quantity of the deposit to be removed determines the insert to be used for periodontal debridement.
- Removal of moderate to heavy deposits: use an insert that is large in diameter and possesses a straight shank
- Removal of slight to moderate deposits: use an insert that is thin in diameter and possesses a straight or contra angled shank

7. **Insert Selection (What to Use)**

<table>
<thead>
<tr>
<th>Insert</th>
<th>Shank Design</th>
<th>Diameter</th>
<th>Comparable Hand Instrument</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal 10</td>
<td>Rigid, Thick, Straight</td>
<td>Large</td>
<td>Columbia 4R/4L</td>
<td>• Heavy calculus removal from accessible surfaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Primarily supragingival</td>
</tr>
<tr>
<td>Universal 1000</td>
<td>Triple Bend, Straight</td>
<td>Large</td>
<td>S Langer 5/6 S Langer 17/18</td>
<td>• Heavy calculus removal from accessible and/or restricted surfaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Supragingival and subgingival</td>
</tr>
<tr>
<td>Beaver</td>
<td>Straight</td>
<td>Broad Flat</td>
<td>Hoe Chisel</td>
<td>• Heavy calculus removal from accessible surfaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Supragingival and subgingival</td>
</tr>
<tr>
<td>Straight</td>
<td>Straight</td>
<td>Slim</td>
<td>Gracey 1/2 Gracey 5/6 Gracey 7/8</td>
<td>• Moderate to slight calculus removal from accessible and/or restricted surfaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Attachment levels less than 4mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Supragingival and subgingival</td>
</tr>
<tr>
<td>Right</td>
<td>Contra angled</td>
<td>Slim</td>
<td>Gracey 11/12 Gracey 15/16</td>
<td>• Moderate to slight calculus removal from accessible and/or restricted surfaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Attachment levels greater than 4mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Supragingival and subgingival</td>
</tr>
<tr>
<td>Left</td>
<td>Contra angled</td>
<td>Slim</td>
<td>Gracey 13/14 Gracey 17/18</td>
<td>• Moderate to slight calculus removal from accessible and/or restricted surfaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Attachment levels greater than 4mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Supragingival and subgingival</td>
</tr>
</tbody>
</table>
8. **INSTRUMENT SEQUENCE (HOW TO USE)**

<table>
<thead>
<tr>
<th>Oral Condition</th>
<th>Sequence</th>
<th>Treatment</th>
<th>Insert</th>
<th>Power Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Calculus</td>
<td>Phase 1</td>
<td>Gross Debridement</td>
<td>Universal 10 Universal 1000</td>
<td>High</td>
</tr>
<tr>
<td>Moderate Calculus</td>
<td>Phase 2</td>
<td>Gross Debridement</td>
<td>Universal 10 Universal 1000</td>
<td>Medium to High</td>
</tr>
<tr>
<td>Slight Calculus</td>
<td>Phase 3</td>
<td>Definitive Debridement</td>
<td>Slim diameter Straight, Right, Left</td>
<td>Low</td>
</tr>
<tr>
<td>Slight Calculus</td>
<td>Phase 4</td>
<td>Definitive Debridement</td>
<td>Hand Instrumentation</td>
<td>n/a</td>
</tr>
<tr>
<td>Biofilm</td>
<td>Phase 5</td>
<td>Definite de-plaquing</td>
<td>Slim diameter Straight, Right, Left</td>
<td>Low</td>
</tr>
<tr>
<td>Extrinsic Stain</td>
<td>Phase 6</td>
<td>Stain Removal</td>
<td>Rubber cup or/Air Polisher</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Note: Sequence of Phases 3 and 4 maybe altered depending on proposed treatment plan

9. **MAINTENANCE OF MAGNETOSTRICTIVE AND PIEZOELECTRIC ULTRASONIC INSERTS**

Ultimately, wear sustained by the insert is the only variable that would determine the need to replace an insert.

An efficiency indicator (wear indicator) is the device used to determine the need to replace an insert.

Replacement and maintenance of magnetostrictive inserts also require:

- monitor condition of stacks and length of time insert has been in use
- replacement of O-Ring
  - indicated when insert is difficult to seat
  - insert extrudes from the handpiece upon activation
  - leakage occurs
  - replace o-ring with the specific manufacturer’s o-ring part
- realign external water tube (if applicable)
  - never manipulate the external water tube itself
  - if applicable, counter rotate the metal grip and the metal stack until the tube is properly positioned

10. **ULTRASONIC BIBLIOGRAPHY**

Please email a request to cfong4954@aol.com
APPENDIX A: Recording Clinical Attachment Levels (CAL)

- Gingival Recession
  - Record: Sulcular depth (Epithelial Attachment to Gingival Margin)
  - Record: Recession (Gingival Margin to Cementoenamel Junction)
  - CAL: ADD sulcular depth measurement plus recession measurement

- Gingival Margin Coronal to Cementoenamel Junction (CEJ)
  - Record: Sulcular depth (Epithelial Attachment to Gingival Margin)
  - Record: CEJ to gingival margin
  - CAL: SUBTRACT CEJ to gingival margin measurement from sulcular depth measurement

- Gingival Margin at Cementoenamel Junction
  - Record: Sulcular depth (Epithelial Attachment to Gingival Margin)
  - Record: Epithelial attachment to CEJ
  - CAL: Both measurements are equal
### APPENDIX B: Periodontal Disease Classification System of the American Academy of Periodontology 2017 (Abbreviated Version)

#### Periodontal Health, Gingival Diseases/Conditions

1. **Periodontal Health and Gingival Health**
   a. Clinical Health on an intact periodontium
   b. Clinical Health on a reduced Periodontium
      i. Stable periodontitis patient
      ii. Non-periodontitis patient

2. **Gingivitis – Dental Biofilm Induced**
   a. Associated with dental biofilm alone
   b. Mediated by systemic or local factors
   c. Drug-influenced gingival inlargement

3. **Gingival Diseases – Non Dental Biofilm Induced**
   a. Genetic/developmental disorders
   b. Specific infections
   c. Inflammatory and immune conditions
   d. Reactive process
   e. Neoplasms
   f. Endocrine, nutritional and metabolic diseases
   g. Traumatic lesions
   h. Gingival pigmentation

#### Forms of Periodontitis

1. **Necrotizing Periodontal Diseases**
   a. Necrotizing gingivitis
   b. Necrotizing periodontitis
   c. Necrotizing stomatitis

2. **Periodontitis**
   a. Stages: based on severity and complexity of management
   b. Extent and distribution: localized, generalized, molar-incisor distribution
   c. Grades: Evidence of risk of rapid progression, anticipated treatment response

3. **Other Conditions Affecting the Periodontium**
   a. Systemic Diseases or Conditions Affecting the Periodontal Supporting Tissues
   b. Periodontal Abscesses and Endodontic- Periodontal Lesions
   c. Mucogingival Deformities and Conditions
   d. Traumatic Occlusal Forces
   e. Tooth and Prosthesis Related Factors
ULTRASONIC INSTRUMENTATION

1. IDENTIFICATION
   - universal gross debridment insert (straight shank/large diameter)
   - definitive debridement insert (straight or contra angled/thin diameter)
   - surfaces of the insert (face, back, lateral borders, point)
   - date manufactured (on stacks)

2. CLINICAL PREPARATION
   - Grasp : Light exploratory
   - Finger rest : intraoral or extraoral
   - Bleed hand piece line to reduce any potential contaminants in the tubing
   - Activate the foot pedal to fill the entire chamber of hand piece with water to eliminate air bubbles
   - Firmly seat the insert into the hand piece
   - Support the handpiece line/tubing by draping it on the forearm or secure it the the pinky finger
   - Use a modified pen or pen grasp
   - Adaptation: Elliptical stroke – adapt face, lateral borders and/or back
      Linear stroke – adapt lateral borders
      Never adapt the point of the insert on root/tooth surfaces

3. CONTROL SETTINGS

   Water
   - Adjust the water knob to ensure sufficient water comes in contact with the anterior third of the insert
   - Adjust the power knob to the appropriate setting for the treatment planned. Generally, power setting is dependent on the type of insert (universal or slim diameter) used and the amount of deposit to be removed (slight, moderate, heavy).

   Power
   - To remove moderate to heavy deposits: use a universal insert on medium to high power settings
   - To remove slight to moderate deposits or for deplaqing: use a slim diameter insert on low to medium power settings.
4. **INSTRUMENTATION TECHNIQUES**

a. Magnetostritive
   - Traditional instrumentation (principles of periodontal hand instrumentation)
   - Modified technique (principles of periodontal probe)
   - Visual cue for adaptation when using a curved, contra angled slim diameter insert (right or left) is being properly adapted utilizing a modified subgingival technique:
     - Place the point of the insert on the occlusal surface of a tooth with the handle of the extending over the anterior teeth
     - Observe the convex (back) curve of the insert
     - Use the insert on the quadrant that the convex (back) contacts
     - Remember (tip toward tissue), which is the opposite of the instrumentation used for periodontal inserts
     - Never adapt the point of the insert on root/tooth surfaces

b. Piezoelectric
   - Traditional instrumentation (principles of periodontal hand instrumentation)
   - Never adapt the point of the insert on root/tooth surfaces

5. **INSTRUMENTATION STROKES**

<table>
<thead>
<tr>
<th>Calculus Removal</th>
<th>Definitive Debridement</th>
</tr>
</thead>
<tbody>
<tr>
<td>adapt the appropriate insert on the tooth</td>
<td>adapt the appropriate insert on the tooth</td>
</tr>
<tr>
<td>utilize only the anterior one third of the insert’s working end</td>
<td>utilize only the anterior one third of the insert’s working end</td>
</tr>
<tr>
<td>engage the coronal portion of the deposit with the insert tip</td>
<td>use light intermittent strokes</td>
</tr>
<tr>
<td>use light intermittent strokes</td>
<td>Systematically instrument the surface using short, controlled, overlapping, eraser-like strokes to ensure that every square millimeter of the tooth/root surfaces are treated</td>
</tr>
<tr>
<td>use a combination of lateral, apical, horizontal and oblique strokes until the deposit is completely removed</td>
<td></td>
</tr>
</tbody>
</table>

6. **TREATMENT EVALUATION**

- During treatment
  - concentrate on the process of instrumentation
  - use tactile and visual cues
- Post treatment
  - soft tissue response
  - levels of periodontal pathogenic organisms
7. **INSTRUMENTATION EXERCISES**

- Elliptical stroke: adapt the back, face and lateral borders
- Linear stroke: adapt the lateral borders

Instructions

- For each of the instrument adaptation exercises determine which of three inserts (right, left and/or straight) is the correct insert(s) to be used for the instrumentation technique.
- Enter “Right”, “Left” and/or “Straight” in the third column (labeled “insert”) to record your answer.

Traditional Adaptation (magnetostrictive and piezoelectric)

- Position the terminal shank of the insert parallel to the long axis of the surface
- The point of the insert should be the leading portion of the insert during instrumentation
- Adapt the active tip area of the insert on the tooth surface
- Use multi-directional short, intermittent, overlapping strokes

<table>
<thead>
<tr>
<th>TOOTH #/NAME</th>
<th>SURFACE</th>
<th>INSERT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 – Max Right 1st Molar</td>
<td>Buccal</td>
<td></td>
</tr>
<tr>
<td>14 – Max Left 1st Molar</td>
<td>Distal (from lingual aspect)</td>
<td></td>
</tr>
<tr>
<td>18 – Mand Left 2nd Molar</td>
<td>Mesial (from buccal aspect)</td>
<td></td>
</tr>
<tr>
<td>30 – Mand Right 1st Molar</td>
<td>Buccal</td>
<td></td>
</tr>
<tr>
<td>23 – Mand Left Lateral</td>
<td>Lingual</td>
<td></td>
</tr>
<tr>
<td>12 – Max Left Bicuspid</td>
<td>Distal (from buccal aspect)</td>
<td></td>
</tr>
<tr>
<td>27 – Mand Right Cuspid</td>
<td>Facial</td>
<td></td>
</tr>
<tr>
<td>29 – Mand Right Bicuspid</td>
<td>Mesial (from lingual aspect)</td>
<td></td>
</tr>
</tbody>
</table>

**Modified Adaptation (magnetostrictive)**

Visual Cues

- place the point or tip of the insert on the occlusal or incisal edge of a tooth
- observe the convex back curve of the insert
- use the insert on the tooth surface opposite the direction of the convex curve with the point away from the tooth

<table>
<thead>
<tr>
<th>TOOTH#/NAME</th>
<th>SURFACE</th>
<th>DEPTH</th>
<th>INSERT</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 – Max Right 1st Molar</td>
<td>Buccal</td>
<td>5 mm</td>
<td></td>
</tr>
<tr>
<td>14 – Max Left 1st Molar</td>
<td>Distal (from lingual aspect)</td>
<td>8 mm</td>
<td></td>
</tr>
<tr>
<td>18 – Mand Left 2nd Molar</td>
<td>Mesial (from Buccal aspect)</td>
<td>6 mm</td>
<td></td>
</tr>
<tr>
<td>30 – Mand Right 1st Molar</td>
<td>Buccal</td>
<td>7 mm</td>
<td></td>
</tr>
<tr>
<td>23 – Mand Left Lateral</td>
<td>Lingual</td>
<td>6 mm</td>
<td></td>
</tr>
<tr>
<td>12 – Max Left Bicuspid</td>
<td>Distal (from Buccal aspect)</td>
<td>8 mm</td>
<td></td>
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<td>Facial</td>
<td>7 mm</td>
<td></td>
</tr>
<tr>
<td>29 – Mand Right Bicuspid</td>
<td>Mesial (from lingual aspect)</td>
<td>5 mm</td>
<td></td>
</tr>
</tbody>
</table>
Customized Adaptation
- Use with both magnetostrictive and piezoelectric technologies
- Any adaptation that allows safe access and efficient debridement without causing damage to the hard and/or soft tissues

8. Deplaquing
- Definitive
  - Use short controlled, overlapping, eraser like strokes to ensure every square millimeter of the tooth/root surface is treated
  - “Color-in” the entire root surface (from epithelial attachment to gingival margin

- Inadvertent
  Occurs unintentionally and simultaneously during ultrasonic scaling